DOCUMENT RESUME

ED 239 728 PS 013 660

TITLE	Classroom Ideas-Winter 1983. Focus on Geology: Rocks, Sand and Crystals. Intermediate Edition.
INSTITUTION	Kern County Superintendent of Schools, Bakersfield, Ca. Div. of Instructional Services.
PUB DATE	83
NOTE	57p.; For related documents, see PS 013 644-667.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Art Activities; Books; *Class Activities; Earth Science; *Geology; Handicrafts; Intermediate Grades; *Learning Activities; Mathematics Instruction; Puzzles; Resource Materials; *Science Activities
IDENTIFIERS	PF Project; Seasonal Celebrations

ABSTRACT

One of a series of activity guides, this publication offers a variety of learning activities and resource materials for intermediate grade students. The activities and resources include: science activities and facts (especially dealing with soil and rocks); mathematics activities; arts and crafts activities (including making a pinata and tree ornaments); word puzzles; and a list of earth science books for children. Several of the activities are related to Christmas and the winter months. (DC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED239728

PS013660

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Claude W. Richardson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

ROCK CANDY

Supplies needed:

- ½ cup water
- Small saucepan
- 2 cups of granulated sugar
- 1 tablespoon
- Wooden spoon
- 1 tall glass
- 1 clean paper clip
- 1 piece of clean cotton string slightly less than the height of the glass
- Pencil

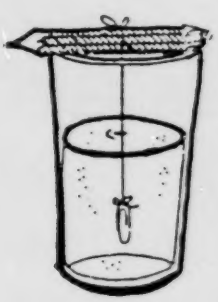
How to do it:

1. Put the half cup of water in the pan and heat until hot (not boiling).
2. Add the sugar one tablespoon at a time.
3. Stir with the wooden spoon after each addition.
4. Do this until the sugar no longer dissolves when you add it (it should take most of the two cups).
5. Heat and stir until the sugar solution boils.
6. Boil one minute or until the solution is thick and clear.
7. Let the solution cool and then pour it into the glass.
8. Tie the paper clip to the string and attach the string to the pencil.
9. Place the paper clip in the sugar solution and let the solution sit at room temperature for one week or more.
10. If the top of the solution crusts over with sugar, break the crust gently.

What happens:

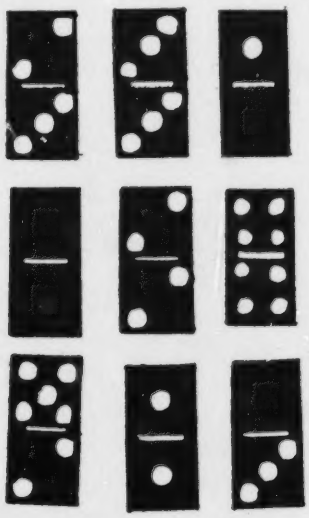
1. How long does it take for the first rock candy crystals to form?

_____



Magic Squares.....

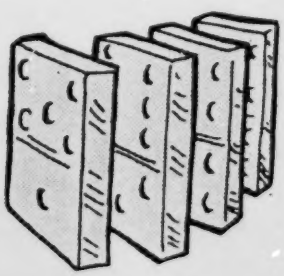
The concept of a Magic Square is that the numbers add to the same sum vertically, horizontally, and on the two main diagonals. Dominoes can be used to achieve this result, as shown by the following example (sum of 12 in rows, columns and main diagonals).



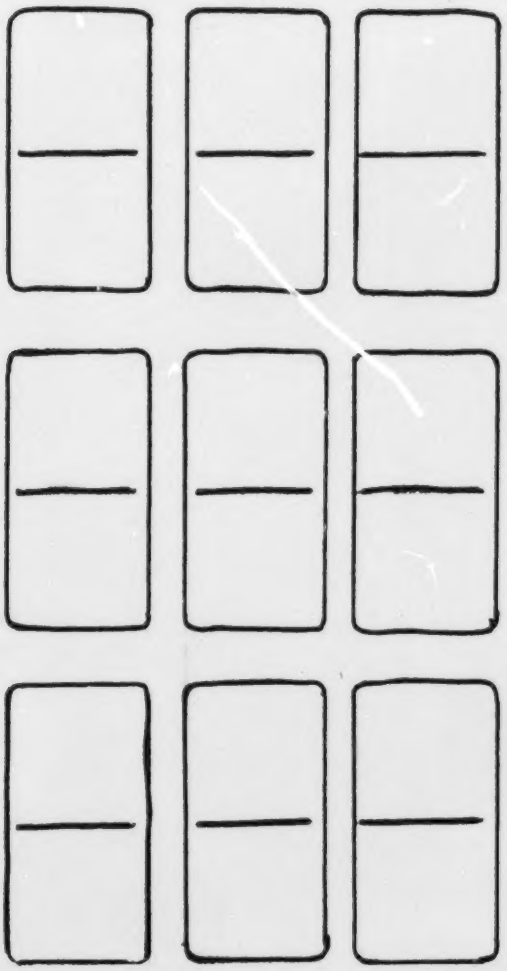
The pattern on the following page may be mounted on heavier tag, laminated, and used for placement of the dominoes.

To make this an easier activity the student may be encouraged to have it work vertically and horizontally only (forgetting about the tough diagonals).

To make this a more challenging task, the teacher may motivate the student to find ALL possible solution sums with a set of Double Six dominoes.



Magic Square



Inside A Stone

If you put a small stone in a bag and it it with something hard, it will break. Now you can see what it is made of. Is the stone all one shade inside? Does every part look the same? Some dark, some light, some shiny, some dull? The different bits of "stuff" are minerals - chemical substances found in nature, usually in crystal form. Some stones are made of many minerals, and some are made of only one.

* *

Rocks and stones come in different sizes and colors.
Rocks are usually very old and are made in many ways.
Rocks tell stories of long ago.
It takes much care to name a rock correctly.
**How many different kinds can you collect?
**How many can you identify?

MOHS SCALE CHART

ROCK	Finger Nail	Penny	Nail	Knife	Glass	Tile	Color	Other
A								
B								
C								
D								
E								

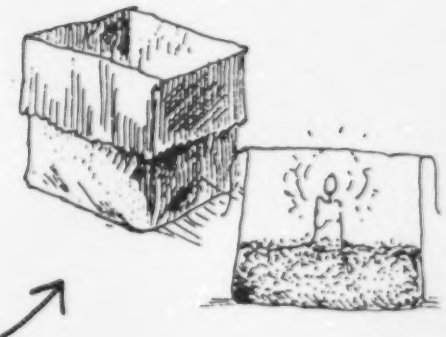
*MOHS' SCALE OF RELATIVE HARDNESS

MATERIAL	WHAT IT WILL DO	Rating
TALC	so soft it's used for talcum powder	1
GYPSUM	a fingernail will scratch it	2
CALCITE	a copper penny will scratch it	3
FLOURITE	a steel knife will scratch it	4
APATITE	a knife scratches if you press hard	5
FELDSPAR	will scratch a knife blade	6
QUARTZ	will scratch glass (and all previous)	7
TOPAZ	will scratch quartz (and all previous)	8
CORUNDUM	will scratch all except a diamond	9
DIAMOND	will scratch everything	10

MY ROCK CHART

ROCK	COLOR		SHADE	WEIGHT	LAYERS	TEXTURE rough smooth	WRITES yes no	SHINY or DULL	CRYSTALS	VINEGAR ADDED	MOHS* RATING	SPECIFIC GRAVITY	OTHER
	dry	wet											
A													
B													
C													
D													
E													

SAND-BAG LANTERNS



You can make lanterns to light up a winter night with sand, paper bags and candles. First figure out how many lanterns you want. Get candles that are at least 4 inches (10 centimeters) long and medium-sized plain brown paper grocery bags that are at least 1 foot (30 centimeters) tall. You need one bag and one candle for each lantern. Fold down the top of each bag so that it looks like this:

The candle should still be a few inches shorter than the bag. Put 3 inches (7.5 centimeters) of sand in the bottom of each bag.

Put the bags wherever you want your lanterns. Give permission to use the spot. Choose an open place outside that isn't close to anything that might catch fire. Some good places are around a patio, in the backyard and along the edge of a driveway.

In each bag, push a candle down in the center of the sand and pack the sand around it. Make sure it's standing up straight, won't tip easily and is in the middle of the bag. Use wooden kitchen matches to light the candles. If you're not allowed to use matches, get someone older to light them for you.

These lanterns glow in the dark and won't blow over or blow out. When a candle burns down, it will put itself out in the sand. But you shouldn't leave any lanterns burning unattended.

FOSSILS

Some Plaster of Paris from a local store will help you reach the goal of discovering how FOSSILS are formed by replacement. You will also need some oil based clay, a table knife, pencil, a solution of soapy water, and shell or other object. Merely follow these instructions and you'll end up with interesting fossils.

1. Form a lump of clay into the shape of a box.
2. Cut the clay into two parts.
3. Score the end of one part so that the parts will not get mixed together.
4. Press a shell lengthwise into the middle of clay A.
5. Lay and press pencil into the clay next to the shell.
6. Put a coating of soapy solution on each part. (This makes it easier to get the two halves apart when the plaster is dried.)
7. Press B on top of A.
8. Carefully separate the two halves and remove the shell and pencil.
9. Make a mixture of Plaster of Paris and water. (The mixture should be thin enough to run into the pencil hole, but not so thin that it will not harden.)
10. Pour Plaster of Paris mixture into half of the mold. Do not overfill. Tap the clay gently to remove any air bubbles.
11. Now put the two halves together. Pour the plaster mixture into hole slowly. Tap again to remove any air bubbles.
12. Let dry 10-15 minutes. Separate the two halves carefully and you'll have an interesting fossil.

P.S. Heated liquid wax also works well if you want to make wax fossils.

LET'S MAKE A PIÑATA

The celebrations at Christmastime in Mexico very often involve the breaking of the piñata.

I. Materials:

Basic shape* - paper sacks of various sizes, ice cream cartons, balloons (not the inexpensive ones), boxes, etc.

Newspapers to tear into strips and to cover working surface.

Liquid starch - probably two bottles will be required.

Cottage cheese carton to hold the liquid starch.

Wire such as a coat hanger (which may have to be cut in the center for inserting in some of the basic shapes) or sturdy string.

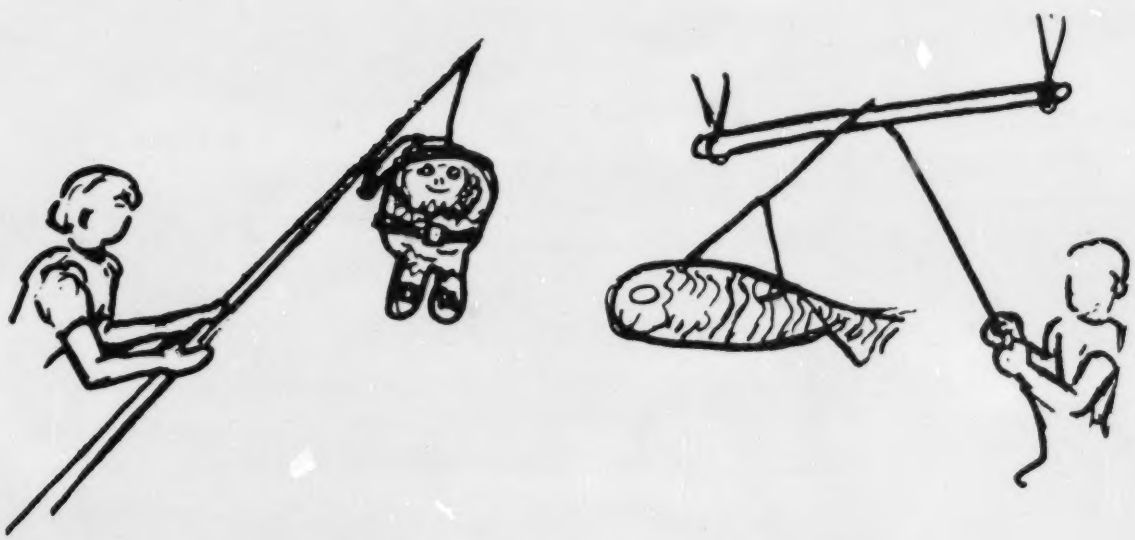
Cardboard tubes and masking tape for attaching tubes to basic shape.

Scissors.

Tissue paper for decoration.

White glue or paste to apply tissue paper and other decorations.

Paint and brush or construction paper if desired.



II. Procedure:

A. Decide if the basic shape listed above will be left as the base of the structure or whether the layers of paper mache will have to be the base of the finished piece. (In the case of the balloon, the balloon is usually broken and the paper mache must be sturdy enough to stand alone.)

B. Stuff soft basic shapes, such as paper sacks, with newspaper, blow up the balloons, or use the tubes and boxes to build legs, necks, heads, etc.

(Be sure to cut all cuts for inserting tubes or rolled paper like a pie. This procedure helps to hold the inserted object in place.)

C. Insert hanging wires or strings. Tape securely into place. The holes made may have to be specially reinforced with paper mache strips if the piñata tends to be heavy.

D. Apply torn newspaper strips which have been dipped in liquid starch until desired thickness. Those shapes which will stand alone (over the balloon) should be at least six layers deep. Alternating newspaper with layers of plain newspaper will keep track of the layers. It is sometimes helpful to string a rope or wire and have the children work on a hanging basic shape. If too heavy, however, the wet strips may give way. The piñata should be worked on several different times allowing for drying in between layers.

E. Allow to dry. Cut a door through the piñata big enough so all of the contents will spill out when broken (usually at the bottom). Remove any stuffing. Test for balance. Adjusting hanging device and secure into place with more tape and strips of newspaper dripped in starch.

F. Fill piñata with candy or goodies.

G. Patch the door with a layer or two of paper strips dipped in starch, making sure the patch remains weak.

Note: Those piñatas chosen to be stationed around the room on the night of the performance should have a paper clip (or two or three) firmly anchored in this door so that when the piñata on the stage breaks, a rope or string which has been attached to these clips can be pulled to break the piñata, scattering the contents around the students gathered at your station. A parent or teacher should be designated as the rope puller, so the contents will not be spilled prematurely!

H. Decorate the surface.

Fold several lengths of tissue paper three to four inches wide, one inside the other, so many strips may be cut at one time.

Cut from the folded side toward the raw edge, stopping the cut about one-half inch from the edge.

Separate the colors and glue or paste into place, overlapping the folded edge over the last raw edge. Work should progress from the bottom to the top. The last raw edge can be finished off with a series of scallops, chopped or folded tissue paper.

Add tissue paper streamers, construction paper eyes, ears, whiskers, tails, etc.

OR

Paint the surface of the piñata in gay colors and add bits of tissue or colored construction paper for detail.

OR

Use other materials such as cotton balls for lambs, paper doilies, wood shavings, or other suitable materials.

I. Hang piñata over a dowel or smooth pipe allowing the rope to hang down on the other side so a student or teacher may pull the piñata up and down. A rope may also be tied to the hanging device so the piñata may also be pulled from side to side.

J. Traditionally, the piñata is broken with a hard club, such as a baseball bat, wielded in turn by blindfolded participants. Care must be taken to keep the rope pullers and the onlookers far enough away so no injuries results. The number of swings may be limited to one, two or three.

PINATA FUN

THE PINATA READING GAME

CHRISTMAS FUN IN MEXICO

Large piñatas
  Hang up high.
The children hit them
  As they pass by.

Funny-faced jars
  Take a great fall
And spill on the floor
  Dulces for all.

PINATA PARTY

At Christmas time in Mexico
In almost every patio
Hangs a piñata, very gay;
Pottery within; without, papier-mache,
Shaped like a star, lamb, donkey,
Elephant, clown, or monkey.
Each child know it is a pack
Of gifts for all, like Santa's sack,
And eagerly awaits the sign
To stand in orderly line,
Be blindfolded in turn,
Then try with a terrific whack
The gift-filled jar to crack.
Whack, whack! It isn't there
But swirling high up in the air!
Someone has pulled the rope,
Yet none will give up hope.
Whack, whack, again, again
Tries each child, large to small.
It must, it shall, be shattered.
Ah, at long last 'tis done!
What laughter and what fun!
What scrambling for a share
By every youngster there!

Have the children decorate a large paper bag with Christmas symbols. Score the four sides of the bag with a sharp instrument; put tissue paper in the bottom of the bag to give it some body.

Cut cards from gaily colored construction paper in toy shapes which the children can make - horns, dolls, kites, drums, boats, cars and Christmas trees. On each card print a word from a reading lesson familiar to the children. Put the word cards, when finished, into the piñata and tie it at the top with colored yarn. While the teacher holds the bag or while it is hanging up, a child strikes it lightly with a ruler or pointer. The bag will open in the sections where it is scored. The child puts his hand into the bag, pulls out a word card, looks at it, shows it to the group and reads it out loud. The child can keep the toy-shaped card for his very own.

BALLOON PINATA

Using an air-filled balloon, glue 1 inch strips of colored tissue paper or decorated newspaper onto balloon. Liquid starch or a flour and water mixture can be used. After strips have dried, break balloon with a pin and cut a hole into which candies and small goodies are placed. Hang from a post or tree. At a given time a person who is blindfolded, breaks pinata with a heavy stick so candies will fall out for children to gather.

ROCKY IDEAS

Make some rock jewelry.

Do a rock sculpture.

Develop a pet rock club and show your wares.

Develop a pen pal program and exchange rocks with students from other cities, states, and countries.

Visit a local rock shop. Identify rock materials that could be used in your class. Ask for samples.

Have children develop an interest center on rocks found at home, books about rocks, rock pictures, rock notebooks, rock music, etc.

Integrate a study of rocks with arts and crafts by making jewelry, paperweight mosaics, book ends, decorated rock box, and natural rock sculptures.

Develop bulletin boards or interest centers that feature these questions:

a. Where do rocks come from?
b. What can you do with rocks?
c. How are rocks used in making things outdoors?
d. How are rocks used in things indoors?
e. What rocks are we using in our classrooms?
f. What rocks are used in making jewelry?
g. What are your favorite rock words?

Toothpick Totals....

Instructions: Students move toothpicks to obtain a true Roman Numeral equation.

Move 1 toothpick to make a true equation:

II - II = II

Move 1 toothpick to make a true equation:

I - I = III

Move 1 toothpick to make a true equation:

I - III = II

Move half the toothpicks to equal a dozen:

IIII

Move 1 toothpick to make a true equation:

II + II + III = V

Move 1 toothpick to make a true equation:

XII - IV = XVII

Note: These problems courtesy of Marcy Cook Math. Come and see Marcy in person - March 9, 1984

ESKIMO GOGGLES

Be the first kid on your block to make Eskimo goggles. The ground is extra bright when the sun shines on it because wet ground reflects light. Your Eskimo snow goggles will cut the glare. To make them you will need heavy cardboard (a shirt cardboard is good), a piece of string about 3 feet or 1 meter long, sharp pointed scissors, a pencil and a ruler.

Cut out a piece of cardboard 6 inches (15 centimeters) long and 2 inches (5 centimeters) high. Hold it up to your face and have a friend or parent carefully mark on it where your eyes are. Using a ruler and a pencil, draw two slits about 1½ inches (4 centimers) long and about 1/8 inch (.3 centimeters) high for your eyes. Stick the point of one scissors blade into the end of an eye slit and cut the slit out. Cut the other eye slit the same way. Check the position of the slits by holding the cardboard up to your eyes. Can you see? Now make a notch for your nose and poke two holes on each side of the goggles. Loop one end of the string through the holes on one side and tie it. Loop the other end through the holes on the other side. Pull that string end tight when you put your goggles on and then tie it.

While you're wearing your goggles, impress your friends by saying Eskimo words: nepcallok (nep-cha-luk) means wet snow, meciqua (me-chu-kak) means water soaked snow.

BUILD A VOLCANO

What you need:

dirt - a place outside
small bottle or can with wide neck
one quart jar or can
white vinegar
baking soda
red dye or food coloring
dishwashing liquid

What you do:

1. Make a mountain of dirt. Bury the small bottle inside it. Make sure the opening of the bottle sticks out the top.
2. Pour 4 tbsp. baking soda into the little bottle.
3. Mix ½ cup water, ¼ cup dishwashing liquid, and ¼ cup vinegar in the quart bottle. Add red coloring to make the mixture look like lava..
4. Pour some of the mix from the quart jar into the small bottle. "Lava" should start erupting!

Why it works:

Baking soda plus vinegar = carbon dioxide gas, which bubbles.
Bubbles mix with the dishwashing liquid to form "lava".
Magma mixed with gas rushes to the surface the same way.

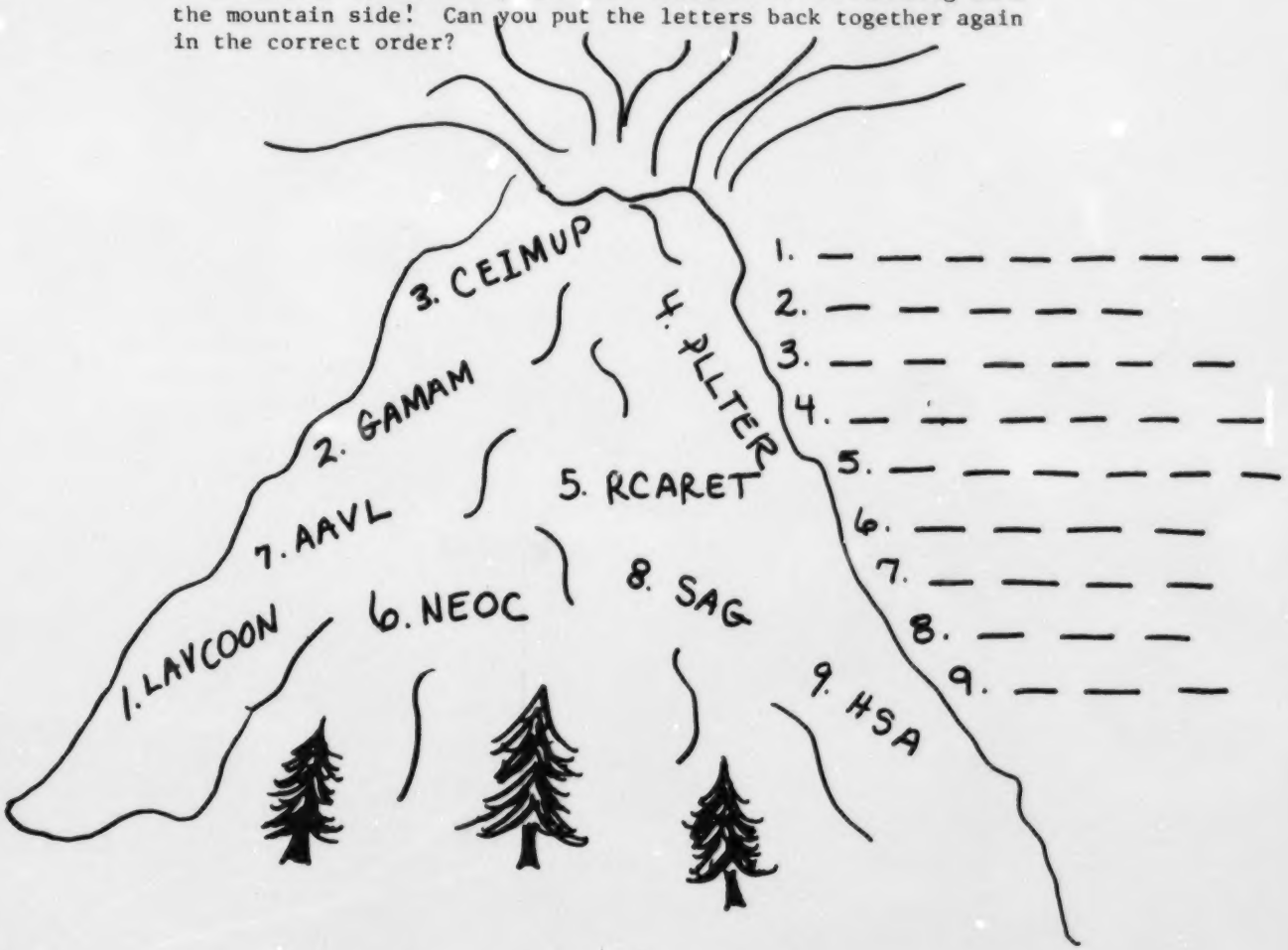
WORD HUNT

S T O C K I N G S M
C H R I S T M A S I
C T R E E T M B E R
L B A L L S N Z L T
B H S A N T A Y D L
K S G W T V Q L N E
J E I X F F U L A S
A V Y C I T E O C N
S L E I G H R H D I
R E I N D E E R S T

STOCKINGS	TREE	CHRISTMAS
SLEIGH	ELVES	GIFT
REINDEER	BALLS	HOLLY
CANDLE	TRIM	TINSEL
	SANTA	

WORD ERUPTION

This volcano blew its top and sent volcanic words tumbling down the mountain side! Can you put the letters back together again in the correct order?



Make a crossword puzzle using the following words. We will do the first part in class. You must come up with a good word or sentence definition.

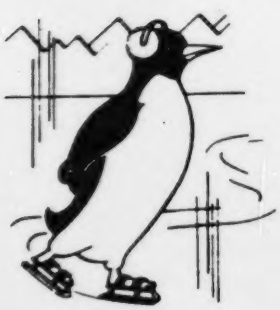
volcano
erupt
cone
magma
lava
earthquake
damage
fault

Coping with the Cold

How's your thermal-I.Q.? Read the following questions and write the answer to each one (make a good guess if you're not sure). After reading these pages, go back and answer them again. What have you learned?

QUIZ

1. Which keeps you warmer - a fluffy blanket or a smooth, tightly woven blanket? Why?
2. Which cup will keep your cocoa hot longer: a fat, round cup; a tall, thick cup or a wide, shallow cup?
3. Why do Eskimos wear loose-fitting clothing?
4. Which is warmer: a mitten or a glove made of the same material?
5. Which will keep you warmer - a thin windbreaker over a fuzzy sweater or a heavy jacket with no sweater or lining?
6. Why do most houses have air spaces or attics between the the ceiling and the roof?
7. Why should you try to dry or change damp clothing quickly in cold weather?
8. How does it help you to curl up when you are cold?



WHAT IS.....

Shivering - If you are cold, but you aren't active, your muscles take over and warm themselves by shivering. In extremely cold air, shivering may save a person from freezing to death.

"Goose pimples" – In cold weather, tiny muscles make the hair stand up, thickening the furry layer on the skin. This situation helps furry animals to keep much warmer by producing more air spaces.

View Two

A new kind of Word Search puzzle - Look for the two-syllable words!

UN	TOR	UM	BAS	KET	KIN	SUS	SON
DIS	LESS	SIL	VER	TY	NAP	PECT	RE
CAR	AD	JECT	BE	TWEEN	TIL	TEM	TIM
TON	SUB	VANT	SER	PLEN	PER	ES	TION
ES	DAL	DOC	SUM	DIS	TANT	CAPE	PAR
DIAN	LUM	BER	NESS	MIT	ETE	ANT	TY
ATE	TIAL	HAR	CUS	PRE	TEND	BUR	DEN

Look up, down, sideways or diagonally, to find two-syllable words. Circle the words - then list them on a separate piece of paper.

There are 17 words in all. WATCH YOUR SPELLING! All the words must be spelled correctly.

EARTH SCIENCE BOOKS FOR YOUNGSTERS

1. The Crust of the Earth - Keith Clayton
2. The Earth - Arthur Beiser
3. The Beginning Knowledge Book of Fossils - Ann Epple
4. How and Why Wonder Book of Fossils - John Burton
5. Fossils of Long Ago - Aliki
6. First Book of Stones - M.B. Cormack
7. Stories Read From The Rocks - Betha Parker
8. Secrets in Stones - Rose Wyler & Gerald Ames
9. Rocks and Minerals: A New True Book - Illa Podendorf
10. Millions and Millions of Crystals - Roma Gans
11. What Does A Geologist Do? - R.V. Fodor
12. Curious World of Crystals - Lenore Sander
13. Let's Find Out About Earth - David Knight
14. Earthquakes: Our Restless Planet - Margaret Reuter

CRYSTALS

There are millions and millions of crystals in the world. You have walked on them. You have kicked them and tossed them. Some people wear them. You have even eaten crystals. When you eat sugar on your cereal or salt on your hamburger, you are eating crystals.

I. Use a hand lens and investigate sugar and salt crystals. Describe and draw each.

Sugar	Salt

II. Do you know how crystals form? You can experiment with a mineral in your kitchen salt.

A. Pour warm water into a jar until it is half full.

B. Add three tablespoons of salt and stir the water until the salt dissolves.

C. Add one more tablespoon salt.

D. Tie a string on a stick or pencil and let the string hang in the water for a week or more.

E. Lift the string, examine it carefully and describe what you see.

SPOOL LUNAR VEHICLE

A very long time ago someone figured out how to wind up a rubber band inside a spool and then make the rubber band unwind slowly to make the spool crawl across the floor.

A modern version uses a spool of any size. Slip a rubber band, which is about the same length as the spool, through the opening, so that it passes from one end of the spool to the other. Anchor one end of the rubber band with a tack to the end of the spool. Slip the other end of the rubber band through the hole in a metal washer. The washer creates enough friction to keep the rubber band from unwinding quickly and yet is slippery enough to allow the wheel to turn slowly. That's why the washer is called a slipper. If you don't have a washer, you can make a slipper from the plastic of a refrigerator container or coffee-can top.

Into the end of the rubber band and through the slipper, put the last part--the drag. It can be a match stick, knitting needle, pencil, and so on. If the rubber band is not taut, wind it several times around the drag to take up the slack.

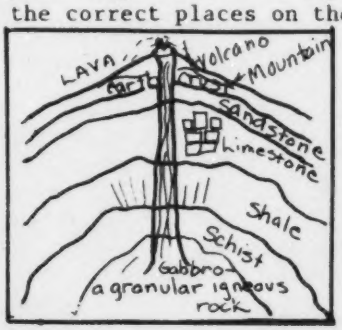
To energize your lunar vehicle, turn the drag to wind up the rubber band inside the spool. Set the spool down on the table. The drag keeps its end of the rubber band from turning. The twisting action of the rubber band is transferred via the anchor to the spool. With the right amount of friction from the slipper, the spool continues across the table until most of the energy you wound into the rubber band is released.

You can have races and battles if your friends also make spool lunar vehicles.

VOLCANO GAME

A. Purpose: To review materials from which volcanos are made.

B. Materials:
1. A large drawing of a volcano and the earth under a volcano drawn by the teacher or the children.
2. Labels for the different types of matter, printed so that the children can fasten them in the correct places on the drawing.



C. Introduction: Imagine that you are a bit of hot matter deep in the earth and you are seeking a way through the layers of the earth to the surface. Now, you cannot get to the earth's surface unless you can tell what each layer consists of. Later, we will play the game by telling just what each layer is and, if it can be used, how we use it.

I shall point to a portion of our drawing and you will pick out the card and the correct label on it, and place it where the matter is located on the drawing. (Point to a place on the chart.) Who wants to pick out the card with the name of the material that makes up this layer?

D. Variation: The children can fill in the names on a mimeographed sheet containing the drawing. They may play the game by telling how we use each type of material.

E. Correlation: This activity can be used as a portion of the work on economics and social studies. The study of heat may include work on volcanos.

AROUND THE WORLD

A. Purpose: To review minerals and where they are obtained.

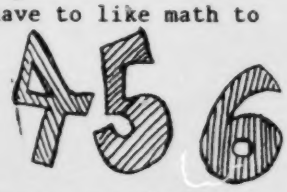
B. Materials: Mount a world map on the board. Place pictures of different minerals around the outside of the map. Number the pictures on the back. Place a corresponding number on the map locating the place from which the mineral is obtained.

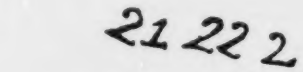
C. Introduction: We have a pencil game today. On the board is a world map and pictures of minerals from all over the world. On a sheet of paper, put the numbers that you see on the map. After each number, write the name of the mineral that is found in that location.

D. Variation: The class may be divided into teams. Each member of a team will connect a picture of a mineral to the place from which it is obtained by thumbtacking a strip of paper from the mineral to the location. This activity can be used in the location of fossils.

IT'S ALL IN THE NUMBERS

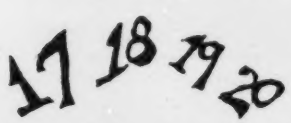
Here are a few number tricks that are as much fun to do by yourself as to use for impressing your friends. Parents are great subjects to practice on until you're well enough to have real visitors. You don't even have to like math to enjoy these tricks. But if you do, no one has to know!





THE AMAZING DIGIT GADGET

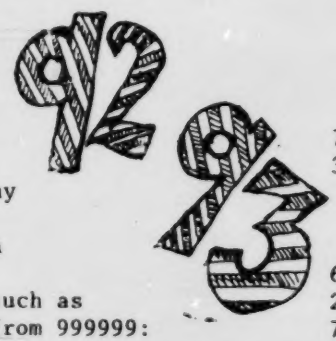
1. Write down the "magic number" - 12,345,679. It's easier to remember than it looks because it's simply all the digits in order except for 8.
2. Name your favorite digit. Whatever number it is, multiply it by 9 and write it beneath the "magic number". For example, if the number you choose is 7, put 63 below the magic number.
3. Multiply the magic number by 63.
4. The answer will be made up entirely of 7's - the very number you chose. Amazing, isn't it?



THE NEVER FAIL TRICK

1. Pick any number between 10 and 1000.
2. Add the digits in that number (if you chose 669, add 6 + 6 + 9 = 21).
3. Subtract the new number from your original (669 - 21 = 648).
4. Now add the digits in your new number (6 + 4 + 8 = 18).

Believe it or not, whatever number you select, when you add the digits of that last number together, you will always come up with either 9 or 18.



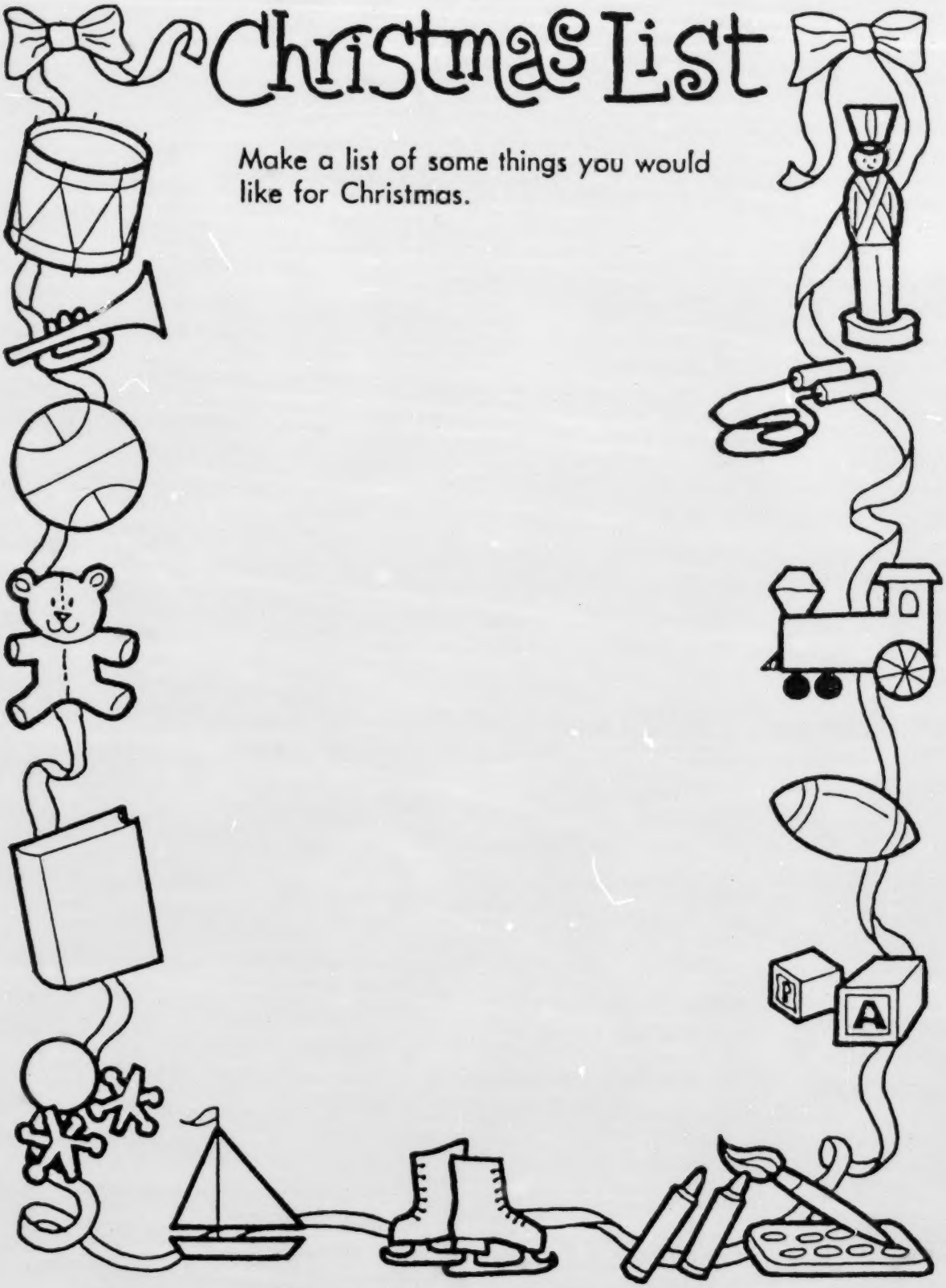
THE INCREDIBLE 3 TRICK

1. Write down a big number - for instance: 727869
2. Now write down a second one, maybe: 347231
3. Then write down another. But not just any old number. This number should be your second number subtracted from 999999. In other words 999999 - 347231 = 652768
4. Now write down another line of numbers, such as 214673
5. Again write down that number subtracted from 999999: 785326
6. Write down any fourth number: 436217
7. Your last row is that number subtracted from 999999: 563782
8. Add all of the numbers together. 3727866

Surprise! You could have written down the final answer the minute the first row appeared. How? Just take the first number, 727869, subtract 3, 727869 - 3, and put that 3 in front of the number: 3727866. Check it out!

Christmas List

Make a list of some things you would like for Christmas.



Coin Capers.....

Directions: Students use a specified number of American coins to make a designated amount (pennies, nickels, dimes, quarters, half-dollars).

Make 25¢ with 8 coins

Make 40¢ with 4 coins
(can you do it more than one way?)

Make 20¢ with 8 coins

Make 18¢ with 14 coins

Make 25¢ with a dozen coins

Make 50¢ with 2 dozen coins

Make 66¢ with 11 coins

Make the value of 2 quarters with 9 coins

Make 70¢ with: 3 coins, 4 coins, 5 coins, 6 coins, 7 coins,

Note: These problems courtesy of Marcy Cook Math. Come and see Marcy in person - March 9, 1984.

SUN, WATER, SOIL, AND AIR

The sun is important to living things. Water is important, too. And, so are soil and air! What is soil? And, why is it important?

Some things to try

1. Put a small bit of lawn soil between two microscope slides. Slowly rub one slide over the other. What do you hear?

   What do you think might make such a sound? Would grass do it? Leaves? Flour? Salt? Sand? Try some of these and see.

2. Study your bit of soil under a microscope. Is there more than one kind of material in your soil? Are the materials the same color or size?

Soil is a mixture

Almost all soil is a mixture of:

1. Bits of rock.

2. Bits of decayed animal and plant matter.

3. Water.

Soil provides the chemicals that green plants need for growth. It provides the chemicals needed to grow some of the foods we eat. Soil provides food that is used by plant-eating animals. Many other animals eat plant-eating animals. Which ones can you name?

Not all soil is the same. The same amount of one soil may have more bits of rock than the same amount of another. In the same way, some soil has more decayed plant and animal matter then others. And some has more water.

Plants grow in different kinds of soil. Some soil is hard and dry. Some is soft and wet.

Have you ever planted seeds that did not grow well? Do you think that the soil had something to do with it?

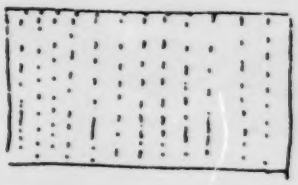
Could some soil be better than others for growing plants? Experiment and see!

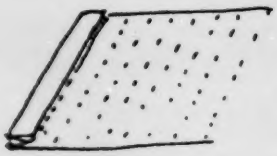
FAN FOLD

1. Mark off thin paper such as typing paper, colored ditto paper, or gift wrap paper. Foil paper is also excellent if available. Smaller children may learn to fold by simply matching the edges as they fold.

   Fold back and forth in a fan.

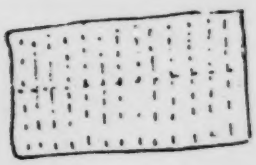
   Construction paper often has a poor grain and does not fold too easily.





2. One or both edges may be cut at an angle.
   One end or the center can be stapled or tied.
   If holes are cut, the resulting fan is more attractive.

3. Fold fan in half - the opposite direction - after making fan folds. Then refold. Push out at center. Tape or staple each end. These may also be "pierced" for greater decoration.



4. If children can handle needle and thread, fold fan an extra long length, gather around one end to pull into a complete circle. These may also be cut at an angle on one end and "pierced". Tie thread at back. Paste two ends together.

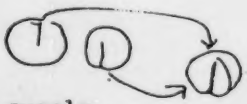
If these decorations are made from Christmas foil wrap, they are very attractive and make beautiful bulletin board ornaments.

TREE ORNAMENTS - POT POURRI

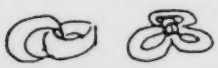
1. Colored Papers - pasted back to back

Paste the colored food pictures from Christmas magazines back to back, or use old Christmas wraps - the better sections - or the plain areas of better cards if silver, gold, etc. - or some "financial statements" come in elegant paper covers.

After dry, children fashion any kind of paper ornament



tie with old Christmas ribbon



for stiff card paper-use paper punch to punch out design

Chinese puzzle type (for stiff papers)

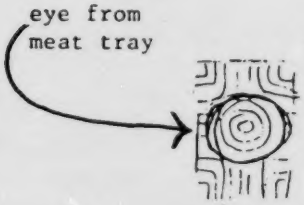
2. Clear Plastic Meat Tray Ornaments

Cut the bulls eye area from the clear plastic meat trays.

Stitch with carpet wrap or wool yarn - using tapestry needles. Any design will do. Use caution when poking hole with needle so the plastic does not tear. Poke a hanging hole & string.

Older students can pre-plan design and poke all holes with the needle before starting stitches.

Cut bull's eye from meat tray



Use blunt tapestry needle

Poke hanging hole and string

3. Tree Rope (kdg.)

Tie knots in cotton roving about 1' apart. These become the places for the students to place the ornaments.

Students go by materials area & pick up wire vegetable tie plus an assortment of other stuffs - small pieces of aluminum foil, roll gum and candy wrappers, celephane candy wrappers - clear or in colors, scraps from clear plastic meat ornaments - bits of nylon netting.

Students sit on floor in circle and wire their bits and pieces to the tree rope at a knot. Nice to have Christmas music on the record player at this time.

4. Plastic (foam) Drinking Cups

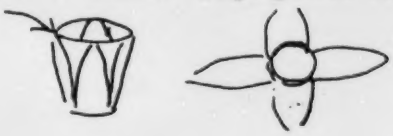
White plastic foam (or even paper) cups can be covered with foil, then yarn strung through bottom - tie knot just under bottom, leaving enough to make "clapper". Wad aluminum foil at end to make "clapper". Knot at bottom prevents pull through. Hang upside down for bell.

Use bits and pieces of plastic cups for TREE ROPE.

5. Paper Cups

Make bells with 4 or 5 petals as illustrated:

If cup is suitable color - red or green - trim "petals" down to bottom and fold out to make "poinsettias". Pierce hanging hole for string.



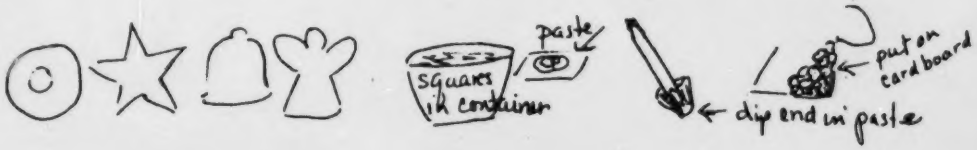
6. Tissue Fluff Ornaments

Make a light weight cardboard shape.

Cut tissue into squares. (Place in cottage cheese carton to keep from flowing.) Wrap square over end of pencil. Dip into glue. Place on cardboard shape and lift pencil. Use 1" squares for small children - smaller for older children. Apply squares close together.

Do both sides for ornaments.

Pierce for hanging hole.

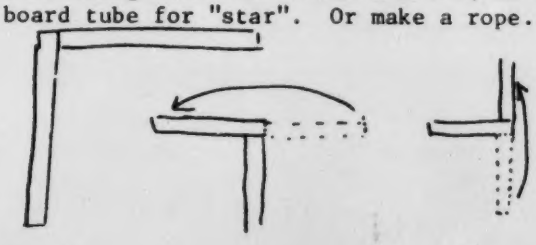


7. Cat Stairs Ornament

Cut strips of desired color construction paper into strips 1/2" or 3/4" or 1" x 18" long. (1" strips are recommended for kindergarten children - ½" strips for older students.)

Place 2 strips at right angles - glue or staple - use 2 different colors for beginners.

Fold strips back over themselves, alternating strips. Additional strips may be added at ends. Use as they are, bring into the circle and use, or insert in cardboard tube for "star". Or make a rope.



Thanks to:
ABC UNIFIED SCHOOL DISTRICT
Curriculum Services/Resource Center

ELEMENT WORD SEARCH

M U N E D B Y L O M
U A E I R O N I U E
N O G R A R O T I S
I T Y N N O D H R E
M I X R E N A I A N
U O O E U S R U D A
L D G T N F I M I G
A I I O N O L U U N
C N I Z L O N U M A
N E G O R D Y H S M

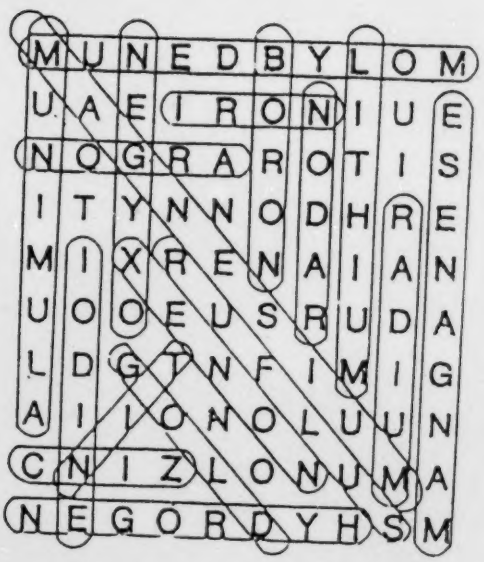
How many elements can you discover. Draw a ring around each element you can find. Check you list. These words may be read down, up, forward, backward and diagonally.

- ☐ 1. Aluminum
- ☐ 2. Argon
- ☐ 3. Boron
- ☐ 4. Gold
- ☐ 5. Hydrogen
- ☐ 6. Iodine
- ☐ 7. Iron
- ☐ 8. Lithium
- ☐ 9. Magnesium
- ☐ 10. Manganese
- ☐ 11. Molybdenum
- ☐ 12. Oxygen
- ☐ 13. Radium
- ☐ 14. Radon
- ☐ 15. Sulfur
- ☐ 16. Tin
- ☐ 17. Xenon
- ☐ 18. Zinc

32

ELEMENT WORD SEARCH

ANSWER KEY



37

SOME WAYS NATURE HELPS ANIMALS COPE WITH THE COLD

Some animals, like woodchucks and bears, hibernate, or sleep, during the winter. Their lowered activity and food intake stored in their fat cells keeps them warm.

Many animals are very active. Ducks can swim in very cold water because the paddling keeps their feet warm.

Most animals who live in the cold regions have shorter and thicker legs, necks, ears and tails than those in warm regions.

Animals, such as bears, that live in the cold north are larger than those of the same kind in the south. Although the larger animals have more surface area than smaller animals, their overall size and weight are more important factors.

The fur of animals provides many air spaces. Most animals can adapt this air space by fluffing out their fur or feathers or by the growing and shedding of winter and summer coats.

Animals in the wild instinctively know how to build shelters of dry leaves and twigs or snow "caves" a little larger than their own bodies. The more the wind packs snow around the "cave" the warmer they are. Their body heat cannot easily escape through the blanket of air and airy snow.

Evaporation - The use of heat to turn moisture into water vapor.

Sweating (Perspiration) - Moisture that comes onto the skin through glands in the body. In cold weather, activity or overdressing can cause a person to sweat. Body heat is then used up to evaporate this moisture. When you are no longer active this loss of body heat can cause you to become chilled.

WHAT FACTORS AFFECT HEAT LOSS?

Size - A small, warm object has less heat to lose than a large one. Which cools off faster: a piece of sliced turkey or a big roast turkey?

Shape - Heat escapes through the surface of an object. A long, thin shape has more surface than a short, compact shape. A pancake will lose heat faster than a muffin - a shallow soup bowl will lose heat faster than a mug.

Dampness - Evaporation will occur when surfaces are wet or damp. Evaporation requires heat; that heat will be taken from your body if your skin or clothing is damp.

Air Space - One of the poorest conductors of heat is quiet air. Wool materials help to keep the body warm. This is due to the air trapped in the wool fibers. Thermos bottles have two shells with air space in between. Houses in cold areas will often have double-layered glass windows with air spaces in between. Would a single layer of glass, double thinkness, work just as well?

Activity - Your muscles are like furnaces. Ordinarily, a person's body muscles produce enough heat every hour to boil a quart of freezing-cold water. The more active you are, the more heat is produced. So, when you feel cold, you should keep moving and you will be warmer.

Location - Your loss of body heat can depend partly on what your body touches. A tile floor feels colder than a rug. Heat flows faster from your skin to a good heat conductor like tile or metal than to a poor conductor like cloth or wood.

LOST SOIL

Water from rain and melting snow carries soil and loose rock material with it as it runs downhill to streams, lakes and the sea. In this way much valuable topsoil is lost. Although this loss cannot be stopped entirely, it is important that we do everything we can to reduce it.

Pupils can learn first hand about soil erosion and ways to retard it by making a few controlled experiments.

1. Get two identical rectangular pans, such as aluminum cake pans. Fill them with soil, preferably sandy. Pack it down and level it off even with the top edge. Set the pans outdoors on a clean concrete walk. Leave one flat and tilt the other by propping up one end on a brick or block. Then sprinkle them equally with a watering can or garden hose, or wait for a heavy rain.

   How do the level and sloping surfaces compare with respect to the amount of soil washed out onto the concrete?

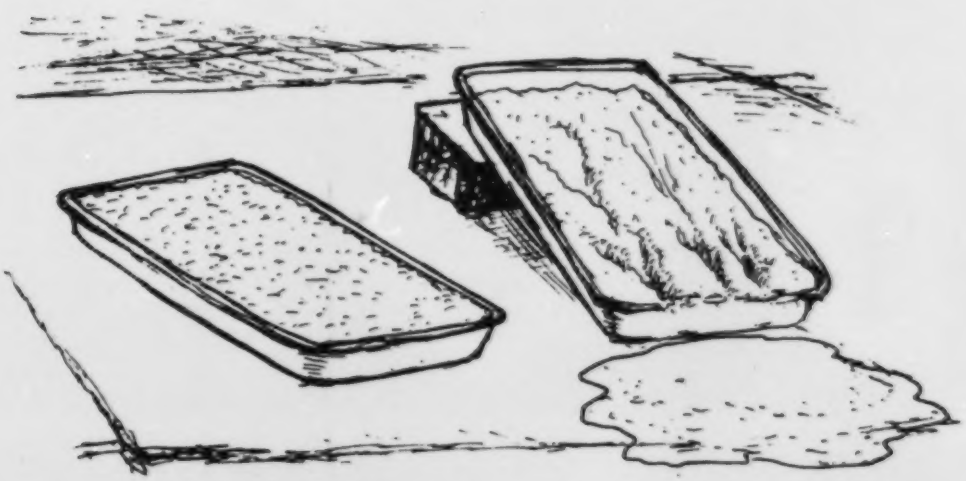
2. Tilt both pans of soil, one steeply and the other gently.

3. Fill one pan with sod "scalped" from a mowed lawn or plant the soil in it with grass, radishes or oats. Leave the soil in the other pan bare and tilt both pans an equal amount.

4. Tilt both pans equally and "plow" the soil in them with a stick so that the miniature furrows run up and down one slope and across the other to represent contour plowing.

5. Mulch the soil in one pan with dead leaves or straw and leave the soil bare in the other. Tilt both pans the same amount.

   Keep a record of the results in your science log.



The Ant and the Cricket

A silly young cricket, accustomed to sing
Through the warm, sunny months of gay summer and spring,
Began to complain when he found that, at home,
His cupboard was empty, and winter was come.
Not a crumb to be found
On the snow-covered ground;
Not a flower could he seen,
Not a leaf on a tree.
"Oh! what will become," says the cricket, "of me?"

At last, by starvation and famine made bold,
All dripping with wet, and all trembling with cold,
Away he set off to a miserly ant,
To see if, to keep him alive, he would grant
Him shelter from rain,
And a mouthful of grain.
He wished only to borrow;
He'd repay it to-morrow;
If not, he must die of starvation and sorrow.

Says the ant to the cricket, "I'm your servant and friend,
But we ants never borrow; we ants never lend.
But tell me, dear cricket, did you lay nothing by
When the weather was warm?" Quoth the cricket, "Not I!"
My heart was so light
That I sang day and night,
For all nature looked gay."
"You sang, sir, you say?
Go, then," says the ant, "and dance winter away!"

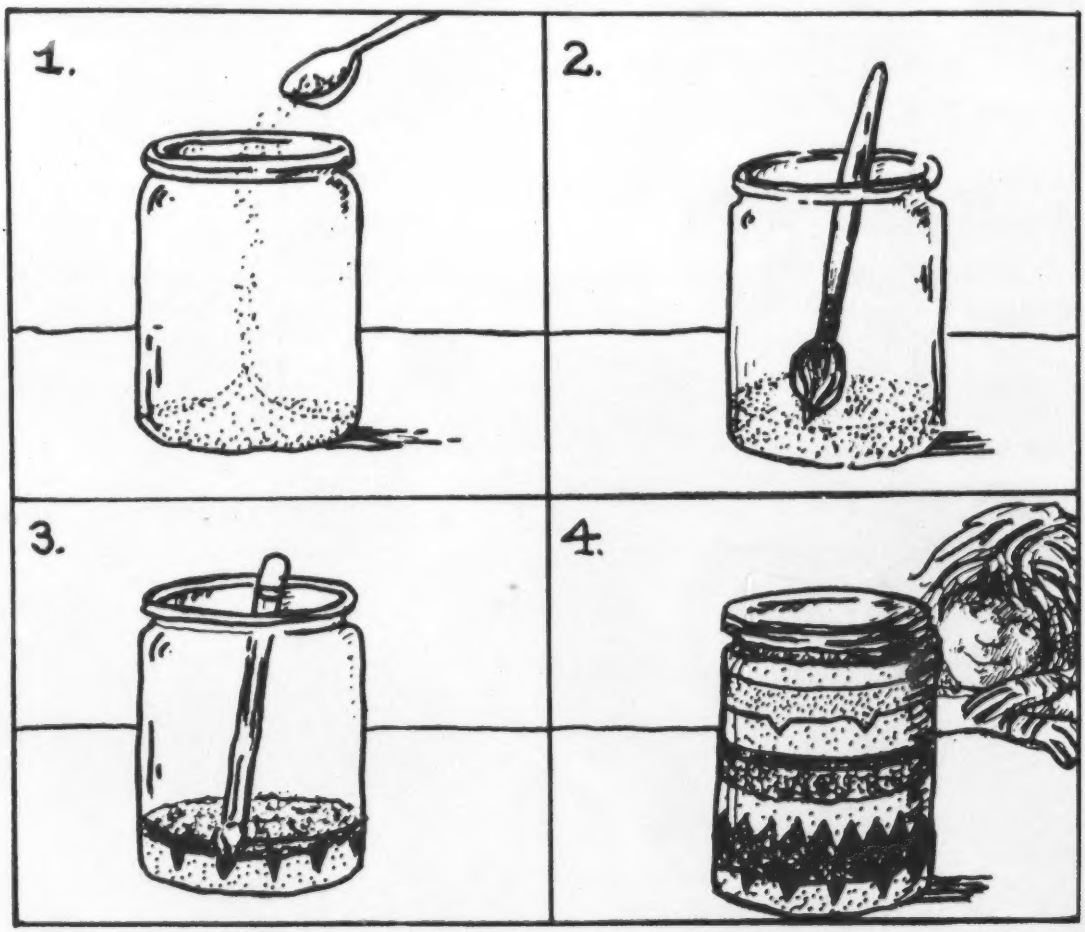
Thus ending, he hastily lifted the wicket,
And out of the door turned the poor little cricket.
Folks call this a fable. I'll warrant its true:
Some crickets have four legs, and some have but two.

Adapted from Aesop

Sand-Jar Art

Make empty jars worth looking at. Be a sand-jar artist. Collect or make different colors of sand, find a widemouthed jar with a lid, and get a big spoon and a small paintbrush.

Spoon sand of one color into the jar and spread it out with the paintbrush to make an even layer. On top of that, spoon sand of another color. Spread that out evenly with the brush, too. To make a jagged design, poke points from a layer of sand down into the one below with a pencil or knitting needle. Do each layer before spooning in the next one. Keep making layers of colored sand until you fill up the jar to the very top. Put on the lid. Don't shake the jar up!



P.S. Sand jars make great bookends.

How to Color Sand

1. Put some dry sand in a jar with a screw-on lid. (If your sand is from the seashore, rinse it to get the salt out before you color it. Put the sand in a bucket. Fill the bucket with water and stir the sand around. Let the sand settle, then pour off the water. Repeat this process three times. Then spread the sand on newspaper to dry.)

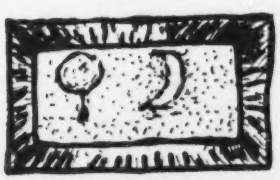
2. Add several drops of food coloring to the jar. Use more if you want a darker color.

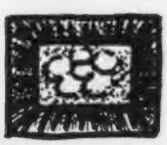
3. Screw the lid on the jar and shake the jar until the sand is completely colored.

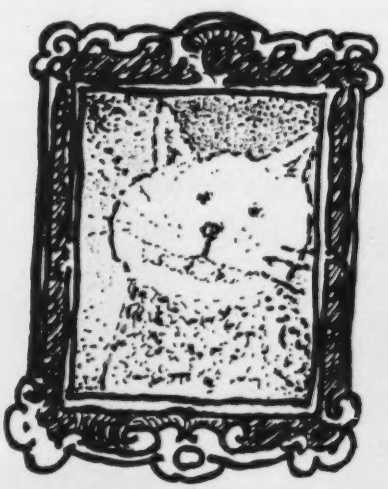
4. Dump the sand on newspaper. Spread it around so it will dry faster. The sand will be much lighter in color when it's dry. P.S. The handiest way to store colored sand is in clear glass jars. Keep each color in a different jar.

Sand Squiggles

Squirt white glue in thin, squiggly lines on colored paper. Make swirls, write your name, draw a picture, or make a design. Sprinkle plain or colored dry sand all over the paper. Don't miss any spots. Let the glue dry until it feels hard when you touch it. Shake the loose sand off the paper, and you have a sand squiggle.







ROCKY INVESTIGATIONS

I. General Overview

Except in rare occurrences of earthquakes, valcanic eruptions and human-made explosions, the earth's surface does not appear to change very much. However, daily changes in weather affect the earth's surface constantly. Weathering of rock produces both soil and sandy beaches.

II. Learning Objectives

Students will observe that soil particles come from larger rocks. They will investigate some of the ways in which rocks are reduced to smaller particles. These experiments should be done over a week's time.

III. Bring various rocks to the classroom.

A. Objective

Investigating hardness of rocks.

B. Activities

Students rub different kinds of rocks together over sheets of paper. They observe the texture and appearance of the particles resulting from the rubbing action and compare the particles to the rock that produced them. They also observe that some rocks are harder than others and produce less dust when rubbed. They try to crush some of the small particles that are broken off. They discuss and compare their observations of hardness, color and texture of the larger rocks and the smaller particles produced from the larger rocks. The teacher summarizes the results in chart (graph) form, emphasizing the difference in wear that rubbing has on the different rocks.

IV. Water and Rocks

A. Objective

Observing the effect of moving water on rocks.

B. Materials

1. sandstone, limestone or shale
2. hammer,
3. thick glass jar with a lid,
4. plus another jar available.

C. Activities

Students observe as the teacher breaks a larger rock into small pieces; they see and feel the rough edges. They observe as the teacher puts some rock pieces into two jars, fills them about half full with water and screws the lids on tightly. One jar of rocks and water is left on the teacher's desk. Students take turns shaking the second jar about 20 times each. When the jar has been passed around the room, they compare the clarity of water in both jars and see and feel the rocks from both jars.

V. Rocks and Freezing Temperatures

A. Objective

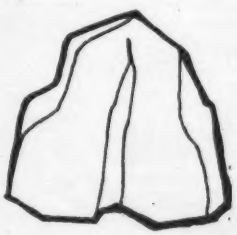
Observing the effect of freezing temperatures on rock.

B. Teacher Preparation

Soak some limestone, sandstone, shale or brick in water overnight. Put the rock in a plastic bag and place it in the cafeteria freezer for several hours. Have a map or globe available for discussion.

C. Activities

Students observe that some of the rock breaks off as a result of the freezing water expanding inside the rock. They discuss what areas of the earth might be affected in the same way - any area that experiences freezing temperatures.



VI. Take a walk around the school yard.

A. Objective

Observing that growing things can break up rocks.

B. Teacher Preparation

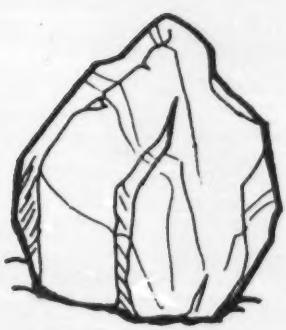
Locate some areas around the school where the roots of trees have broken up the pavement, concrete sidewalks or boulders. Show students some pictures of trees growing in cracks in rocks.

C. Activities

Students observe the effect of the force of growing trees on pavement, concrete and rocks and conclude that growing things are one cause of rocks breaking into

smaller pieces. They summarize all the different factors that they have observed that can cause rocks to break up. All of the factors studied (and others, such as wind) are identified as examples of how rock is slowly worn down to soil.

All investigation results should be charted and on display, possibly by a geology center in a corner of the classroom.



You may take 3 "free ones" and still be a wizard!

C	BIRD	INSECT	STORY BOOK CHARACTER	STATE	(Optional) CARS
h					
r					
i					
s					
t					
m					
a					
s					

YOUNG FOSSILS

Fossils seem to have a special appeal for children. They like to hunt for them and often bring some to school. But even if none are found nearby, pupils can acquire a better understanding of what they are and how they may have been formed by making some "fossils" and "discovering" them.

1. Have them nearly fill a large pan with mud from a dried up puddle. Let them add water to it gradually and take turns stirring it with a stick until it is as smooth as pancake batter. This mud represents sediment deposited on the bottom of the sea.

   What in the sea might stir up sediment?

2. While they are stirring the mud, let pupils take turns in dropping in shells, fish bones, crab claws, bits of coral, starfish and other objects from the sea. Everyone should add something.

   Does anything like this happen in the sea? How?

3. Set the pan aside and allow the mud to dry out. This takes less time in a heated room. The mud, when hard, is somewhat like the rocks formed when sea sediment hardens.

4. When the mud is completely dry, let each pupil have a hand in breaking it apart and discovering the "fossils" in the "rock".

   Are the impressions of shells and bones in rock considered to be fossils or must the actual remains of animals be present?

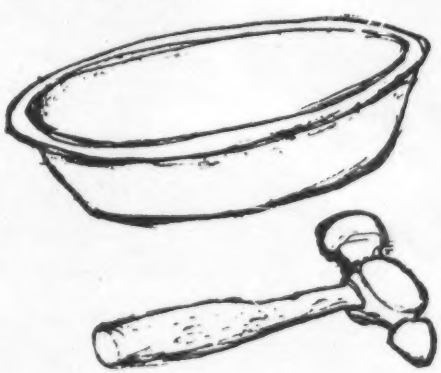
5. Pupils may also make "fossils" like those that could be formed in a lake, using shells of freshwater clams and snails, crayfish claws, fish and bird bones and leaves.

   As a follow-up, it is worth taking a field trip to a nearby lake or seashore, or even a puddle, to see how fossils may be formed if conditions are suitable.

   How much chance does a dead fish, twig or insect have of becoming a fossil?

   What would have to happen to it?

   What usually does happen to it?



H Q U D T W S A N D S T O N E
O U Z E R A C N C Y S P E M S
R N S N E Y H S H A L E Y P M
N V A I E S I M A X S L H B O
F C E T B A S A L T A B W C S
E I A R T G T R K Y V R A S D
L L L I M E S T O N E A T E Q
S O B S I D I A N G N M N R U
I D R N N G E M C O Q U I N A
T U F F E T C P O L F S S G R
E G C V I S W U Y M X M F A T
F C O N G L O M E R A T E B Z
S V A X Y O R I N S H Y I B I
L R L G W K P C L L C H E R T
G N E I S S U E C E X H T O E

ROCK WORD SEARCH

See how many rocks you can discover. Draw a ring around each rock you can find, then check your list.

These words may be read up, down, forward, backward, and diagonally.

Six Igneous Rocks

- ☐ 1. Basalt
- ☐ 2. Felsite
- ☐ 3. Gabbro
- ☐ 4. Granite
- ☐ 5. Obsidian
- ☐ 6. Pumice

Eight Sedimentary Rocks

- ☐ 1. Chalk
- ☐ 2. Chert
- ☐ 3. Coal
- ☐ 4. Conglomerate
- ☐ 5. Coquina
- ☐ 6. Limestone
- ☐ 7. Sandstone
- ☐ 8. Shale

Seven Metamorphic Rocks

- ☐ 1. Gneiss
- ☐ 2. Hornfels
- ☐ 3. Marble
- ☐ 4. Quartzite
- ☐ 5. Schist
- ☐ 6. Slate
- ☐ 7. Tuff

ABC UNIFIED SCHOOL DISTRICT
Curriculum Services/Resource Center

MINERAL WORD SEARCH

T O R T H O C L A S E
H A L I T E V I O T R
S U L F U R H E T O M
C A L C I T E W I P U
E T O Y T E M I C A S
N E B D Q U A R T Z C
I N P M S Q T S A L O
V R A P A T I T E B V
I A Y M L I T E K J I
L G W X N G E A T E T
O P V P Y R O X E N E

See how many minerals you can discover. Draw a ring around each mineral you can find, then check your list. These words may be read up, down, forward, backward, and diagonally.

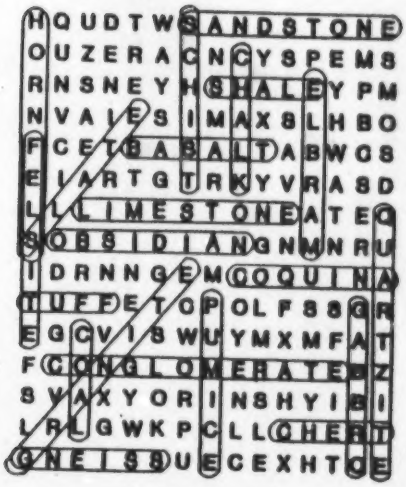
☐ 1. Apatite	☐ 6. Hematite	☐ 11. Pyroxene
☐ 2. Calcite	☐ 7. Mica	☐ 12. Quartz
☐ 3. Garnet	☐ 8. Muscovite	☐ 13. Sulfur
☐ 4. Gypsum	☐ 9. Olivine	☐ 14. Talc
☐ 5. Halite	☐ 10. Orthoclase	☐ 15. Topaz

ABC UNIFIED SCHOOL DISTRICT
Curriculum Services/Resource Center

ANSWER KEY

MINERAL WORD SEARCH

ROCK WORD SEARCH



BRICK PEBBLES

Too often pupils read and talk about how water wears away rocks without having any experiences with what really happens. Yet a class can easily learn at first hand how the abrasion of rocks may occur by making some brick "pebbles" as a project.

Break a common "soft" red brick with a hammer. Put six to ten angular pieces, each about an inch across, in a strong thick-walled jar with a cover. Add water until the jar is half full, close it tightly and place it in a paper bag case it should crack.

Ask ten pupils to give the jar 100 shakes each - not so hard as to break the glass. Then let the class examine the fragments, observe the color of the water and scrap the inside of the jar with their fingernails. Pour the water into a gallon jar and let the mud settle. (See "Sorted Stones".)

Let pupils repeat this, giving the fragments 1,000 shakes each day until they are well rounded. Have them record the number of shakes, note changes in the fragments and the jar and save the mud.

Does the water abrade the fragments, or do they wear each other and the jar?

Where does this sort of thing happen to real rocks?

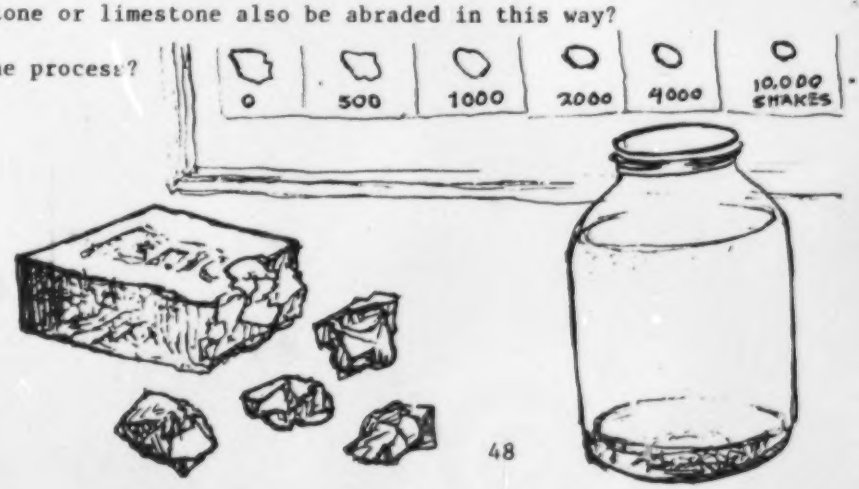
Might mud be formed from these rocks?

A record of the pebble-rounding may be made with an overhead projector. The angular fragments are crayoned heavily on one side, placed on the projector with this side down, and projected on paper taped to the wall. Their silhouettes are traced exactly and then cut out. A new set of cutouts is made after each 1,000 shakes, always with the fragments in the same position and the projector at the same distance from the paper. The cutouts are then mounted to show the change in shape of the "pebbles".

Can rocks like sandstone or limestone also be abraded in this way?

Does sand speed up the process?

Let pupils find out!

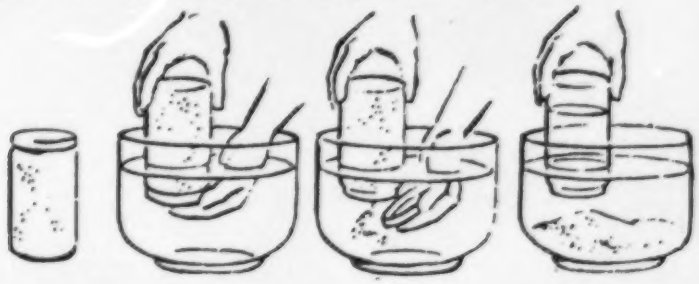


Fill a jar with pebbles.

Is it really full of pebbles?

How much water do you suppose can fit in the spaces between the pebbles? You may measure this in cupfulls. The water pushes the air out. Does it push it all out?

Is there more air space in a jar of dry pebbles or in a similar jar of dry sand? Here is a good way to measure this space.



The air in the sand stays in the jar as the sand falls out. How much air stays in the jar?

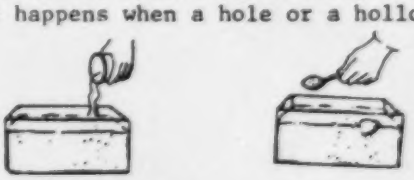
How much space must there have been between the sand grains?

How much space in the jar was really filled with sand?

Now try this with dry pebbles in the jar. Which has more space in it, a jar of dry sand or a similar jar of dry pebbles?

Do you suppose that solid rock has spaces in it, too? To find out, place a few drops of water on clean rocks of different kinds. Watch to see whether the water soaks in. If it does, what does this show? Does water soak into some kinds of rock faster than others?

WATER IN THE GROUND. When water is added to the sand in this tank, what happens to the spaces in the sand? What happens when a hole or a hollow is made in this water-soaked sand?

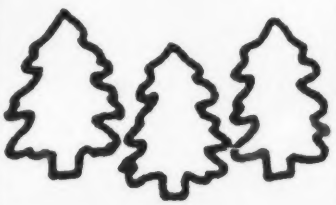


The same thing would take place if there were pebbles in the tank instead of sand. It would even happen if the tank held a block of rock with spaces in it. Of course, it would be a harder job to make a hole or hollow in the rock. But if it could be done, the hole would get water in it, too.

Package Name Tags

Color and cut out tags on these pages. Use them for the Christmas gifts you give.

To:



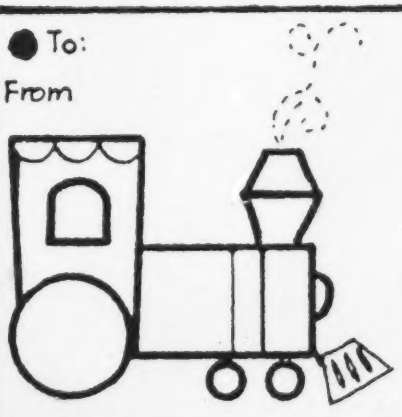
From:

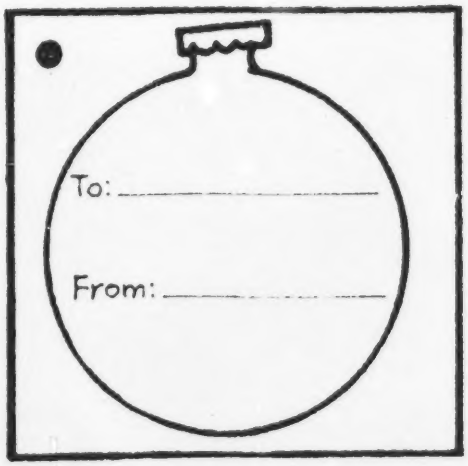
To:

From:

To:

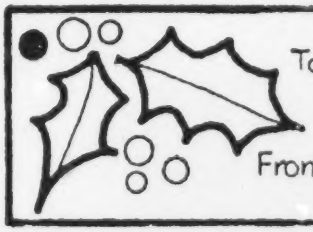
From





To: _____

From: _____



To: _____

From: _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday